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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/783,399

02/19/2004

James R. Hanrahan

GT/112

6370

28596

7590

09/14/2006

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EXAMINER

COMPTON, ERIC B

ART UNIT

PAPER NUMBER

3726

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/783,399

Applicant(s)

HANRAHAN, JAMES R.

Examiner

Eric B. Compton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7, 10-19, 22, 27-33, 38-41, 44 and 45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10-19, 22, 27-33, 38-41, 44 and 45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: on page 4, line 9, the "s" before "single node" should read --a--.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-7, 10-12, 30-33, and 38-41 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0 731 153 to Korleski.

Regarding claim 1, Korleski discloses an article comprising:

a porous expanded PTFE material having a microstructure defined by nodes interconnected by fibrils wherein the nodes are aligned to form one or more column in the thickness direction of the material, see Figure 1, and

at least one polymer resin selected from the group consisting of thermoset resins and thermoplastic resins distributed within the pores of the expanded PTFE, see Abstract.

Regarding claims 10-12, and 30, "Figure 4 illustrates composite which can be fabricated using the present invention. Adhesive film A containing nodes B

interconnected with fibrils C with adhesive D and particles E is attached to at least one layer of metal F." Page 8, lines 20-21.

Regarding claims 2-3, 31-32, see Figure 1 (showing left-most columns comprising a single node and other columns comprising a plurality of nodes).

Regarding claims 7 and 41, the expanded PTFE may include at least one filler. See Page 5, lines 21-28 (discussing fillers).

Regarding claim 4 and 38, the resin may be epoxy. See e.g., Page 8, line 33; Claim 11.

Regarding claims 5 and 39, the resin may be a polyimide. See e.g., Page 5, line 42 (mentioning "acetylene-terminated polyimide").

Regarding claims 6 and 40, the article/composite may contain two or more layers of expanded PTFE. See Page 7, line 9 ("... several layers can be combined to build a composite.").

Regarding claim 33, PTFE is a generally recognized wear resistant material. Furthermore, the reference notes changing components to increase toughness and strength. See e.g., Page 5, lines 47 & 54. The "wear-resistant" limitation is construed as an intended use and merely requires the inherent capable, which is the case here.

4. Claims 1-4, 6-7, 10-16, 18-19, 27-33 38, 40-41 and 44-45 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. 3,953,566 to Gore.

Regarding claims 1, Gore discloses an article comprising:

a porous expanded PTFE material having a microstructure defined by nodes interconnected by fibrils wherein the nodes are aligned to form one or more column in the thickness direction of the material, see Figure 1, and

at least one polymer resin selected from the group consisting of thermoset resins and thermoplastic resins distributed within the pores of the expanded PTFE, see e.g. Example 11 (disclosing imbibing material).

Regarding claim 13, 33 and 44, Gore discloses, "These properties make impregnated materials of the type described here particularly using as bearing materials." Col. 16, lines 63-65 (emphasis added).

Regarding claims 2-3, 14-15, 31-32, see Figure 1 (showing some columns comprising a single node and other columns comprising a plurality of nodes).

Regarding claims 4, 16, and 38, the resin may be epoxy. See Col. 17, line 14.

Regarding claims 6 10-12, 18, 30, 40 and 45, the article/composite may contain two layers of expanded PTFE to form a laminate including epoxy. See Col. 17, lines 24-25.

Regarding claims 7, 19, and 41, the expanded PTFE may include at least one filler. See Col. 21, lines 60-65 (discussing fillers).

5. Claims 1, 4, 13, 16, 30, 38 and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. 4,976,550 to Shobert.

Regarding claims 1, 13, 30, and 45, Shobert discloses:

A plastic bearing is provided, as well as a method of fabricating these bearings, in which a number of strands of expanded polytetrafluoroethylene fibers are woven about a cylindrical mandrel to form a fabric about this mold surface. The fabric is then impregnated with a hardenable plastic. The

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plastic is hardened and the bearing is removed from the mold surface. The resulting plastic bearing has greatly improved wear resistance which permits new applications.

Abstract (emphasis added). Shobert discloses the fibers are GORE-TEX of the type formed by Gore.

Regarding claims 4, 16, and 38, the resin may be epoxy. See Col. 2, line 27.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 5, 17, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gore and/or Shobert in view of U.S. Pat. 6,548,188 to Yanase et al and/or U.S. Pat. 4,0745,512 to Matt

Gore and Shobert disclose the inventions cited above, but do not disclose polyimide as a resin.

Both Yanase and Matt disclose PTFE fiber bearings imbibed with resin, e.g., polyimide.

Regarding claims 5, 17, and 39, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have imbibed the bearings of Gore and/or Shobert, with polyimide, in light of the teachings of Yanase and/or Matt, to provide increased wear resistance.

***Response to Arguments***

8. Applicant's arguments filed July 26, 2006, have been fully considered but they are not persuasive.

9. Applicant's argues that the prior art relied on in the rejections: Koleski, Gore and Shobert, do not disclose the nodes and fibril structure are "... aligned to form one or more columns in the thickness direction."

With regards to this particular limitation, Applicant disclosed on page 4 of the Specification (emphasis added):

The preferred ePTFE structures of this invention can be described more particularly as exhibiting a columnar nodal microstructure, whereby on visual inspection of a cross-sectional microstructure one can identify one or more columns of aligned nodes in the thickness direction of the material (i.e., in the direction orthogonal to the plane of the fibrils). More preferred ePTFE structures exhibit one or more columns of aligned nodes through a substantial portion (e.g., 50% or more) of the thickness. ***Depending on the particular ePTFE material, the microstructure may include columns comprising a plurality of nodes, columns comprising s ["a" sic] single node, or some combination thereof.*** Referring to Figure 4, for example, showing the node 21 and fibril 23 structure of a unique ePTFE materials suitable in this invention, the nodes 21 exhibit a stacked, or columnar, alignment through at least a portion of the thickness of the ePTFE material. The imbibed and cured cross-sectional microstructure shown in Figure 5, while visually different from the unimbibed structure, also allows a degree of columnar alignment of the nodes 21.

Therefore, the invention is broad enough that a "column in the thickness direction" may comprise a single node. While, the disclosure states it is preferred to have the columns be 50% or more of the thickness, such a limitation is not expressly claimed. Furthermore, the disclosure later teaches the columns of nodes are preferably

produced following U.S. Pat. 4,482,516 to Bowman et al. See Pages 6-7 ("The microstructure [of Bowman et al] also exhibits a columnar, or stacked, alignment of the nodes in at least a portion of the thickness direction of the material.").

Korleski

This reference clearly shows at least a single node (B) "aligned to form one column in the thickness direction." As noted above, the limitation is broad enough to encompass a column comprising a single node as taught by Korleski. Furthermore, like Applicant, the reference expressly teaches, "If the substrate is to be expanded polytetrafluoroethylene, then structures similar to those taught in U.S. Patent No. 4,482,516 to Bowman, et al. are desirable." Page 7, lines 32-33. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Gore

With respect to the node, the reference discloses:

As shown in FIG. 1, the expanded, amorphously locked, porous material 10 of this invention ***comprises a large plurality of nodes 11 which are oriented perpendicularly to the direction in which the expansion was effected. These nodes, on the average about 50 microns in size and fairly irregular in shape, lie closely together and in many instances appear to touch at points.*** A given node is connected to adjacent or nearby nodes by fibrils 12 which vary in length from 5 to 500 microns depending upon the amount of expansion. While FIG. 1 shows a uniaxial expansion effect, it will be appreciated that with expansion biaxially and with expansion in all directions, similar fibril formation occurs in said directions with the production of spider-web-like or cross-linked configurations and attendant increases in strength. The porosity also increases as the voids or spaces between the polymeric nodes and fibrils



become more numerous and larger in size.

Col. 6, lines 25-44 (emphasis added). Again as noted above, the limitation is broad enough to encompass a column comprising a single node aligned in the thickness direction as taught by Gore. Furthermore, the reference recognizes that nodes may lie close together and touch each other, which inherently will form larger columns. Figure 1 clearly shows the nodes oriented into columns in the thickness direction with some columns being larger than others.

Shobert

This reference discloses the strands of fiber used to produce the bearing are made of GORE-TEX. See Col. 2, lines 1-3. The strands are an expanded polytetrafluoroethylene. See *Id* at line 61. These are the same type of fiber formed by Gore. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977).

Having addressed Applicant's arguments, the Examiner maintains the above rejections.

**Conclusion**

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

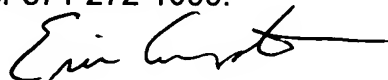
***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric B. Compton whose telephone number is (571) 272-4527. The examiner can normally be reached on M-F 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Bryant can be reached on (571) 272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Eric B. Compton  
Primary Examiner  
Art Unit 3726

ebc